UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

86661 7590 08/24/2009

Potomac Patent Group PLLC
P.O. Box 270
Fredericksburg, VA 22404

EXAMINER	
WONGWIAN, PHUTTHIWAT	
ART UNIT	PAPER NUMBER
3741	

DATE MAILED: 08/24/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,271	04/24/2006	Andrea Casoni	0341-007	7517

TITLE OF INVENTION: CORRECTED PARAMETER CONTROL METHOD FOR A TWO-SHAFT GAS TURBINE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	11/24/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

86661 7590 08/24/2009

Potomac Patent Group PLLC
P.O. Box 270
Fredericksburg, VA 22404

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,271	04/24/2006	Andrea Casoni	0341-007	7517

TITLE OF INVENTION: CORRECTED PARAMETER CONTROL METHOD FOR A TWO-SHAFT GAS TURBINE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	11/24/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
WONGWIAN, PHUTTHIWAT	3741	060-773000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,271	04/24/2006	Andrea Casoni	0341-007	7517

86661 7590 08/24/2009

Potomac Patent Group PLLC
P.O. Box 270
Fredericksburg, VA 22404

EXAMINER	
WONGWIAN, PHUTTHIWAT	
ART UNIT	PAPER NUMBER
3741	

DATE MAILED: 08/24/2009

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 580 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 580 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/539,271	CASONI ET AL.	
	Examiner	Art Unit	
	PHUTTHIWAT WONGWIAN	3741	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendment filed on 04/21/2009*.

2. ☒ The allowed claim(s) is/are *46,49-64,66 and 69-87*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date See Continuation Sheet
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Continuation of Attachment(s) 3. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date: 04/21/2009, 07/23/2009.

DETAILED ACTION

Response to Amendment

1. This office action is responsive to the amendment filed on 04/21/2009. Claims 1-45 have been canceled, claims 46-87 have been added, thus claims 46-87 are currently pending in this application.

Drawings

2. The drawings were received on 04/21/2009. These drawings are accepted.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Steven Dubois on 7/22/2009.

The application has been amended as follows:

Claims 47-48, 65 and 67-68 have been canceled.

Claims 46, 49-64, 66 and 69-87 have been amended to - -

46. (Currently Amended) A control method for a gas turbine comprising:

controlling opening of at least one fuel valve to maintain a temperature (Tfire) of gas at an inlet of the gas turbine and a fuel-air ratio (F/A) within predetermined limits by:

calculating a set point exhaust temperature (TX) as a sum of a reference temperature (TXbase) and a plurality of correction values each of which are associated with a different operating parameter;

wherein corrections values are calculated by computer simulations of the gas turbine, the simulations being conducted by specifying attainment of one of: a maximum of the set point exhaust temperature (TXmaxTfire) and a maximum of the fuel-air ratio (F/A), for each condition differing from a reference condition;

further wherein said plurality of correction values includes four corrections values and wherein said step of calculating further comprises calculating:

TX = TXbase + DeltaTX_Dpin + DeltaTX_Dpout + DeltaTX_Hum + DeltaTX_PCNLP

where:

TX is said set point exhaust temperature;

DeltaTX_Dpin is a correction value for the set point exhaust temperature (TX) associated with a variation of pressure drops in intake pipes with respect to a nominal value of 0 mmH2O,

DeltaTX_Dpout is a correction value for the set point exhaust temperature (TX) associated with a variation of pressure drops in exhaust pipes with respect to a nominal value of 0 mmH2O,

DeltaTX_Hum is a correction value for the set point exhaust temperature (TX) associated with a variation of a relative humidity of air with respect to a nominal value of 60%, and

DeltaTX_PCNLP is a correction value for the set point exhaust temperature (TX) associated with a variation of a speed of a low pressure shaft with respect to a nominal value of 100%.

47-48. (Canceled)

49. (Currently Amended) The control method of claim 46 ~~48~~, wherein a maximum exhaust temperature curve is generated for each of a plurality of speeds associated with said gas turbine.

50. (Previously Presented) The control method of claim 49, wherein said reference temperature (TXbase) is a reference temperature associated with one of said plurality of speeds associated with said gas turbine (Txbase(PCNLP)).

51. (Previously Presented) The control method of claim 50, wherein there are two values of TXbase(PCNLP), a first value related to a curve of maximum temperature (Tfire) and a second value related to a curve of maximum increase of temperature (Trise) of ~~the~~ a gas in a combustion chamber of the gas turbine.

52. (Currently Amended) The control method of claim 51, further comprising calculating said first value as:

TXmaxTfire =TxbasemaxTfire(PCNLP,PR)+ DeltaTX_DPin + DeltaTX_Dpout +

DeltaTX_Hum,

and calculating said second value as:

TXmaxTrise= TxbasemaxTrise(PCNLP,PR) + DeltaTX_DPin + DeltaTX_Dpout +

DeltaTX_Hum,

where:

TXmaxTfire is said maximum of the set point exhaust temperature;

TxbasemaxTfire is a temperature curve associated with said maximum of the set point exhaust temperature;

TxbasemaxTrise is a temperature curve associated with a maximum permissible rise in temperature;

PR indicates values having a dependence on a compression ratio (PR).

53. (Previously Presented) The control method of claim 52, further comprising the step of:

providing said temperature curves TXbasemaxTfire and TXbasemaxTrise as two-dimensional tables, with the compression ratio (PR) and the gas turbine speed (PCNLP) as independent variables.

54. (Currently Amended) The control method of claim 52, wherein a said maximum temperature (TXmaxTfire), as a function of the compression ratio PR which enables a said maximum (TXmaxTfire) to be attained, is a set of curves, each curve associated with a specific value of speed PCNLP, each successive curve generally having an

increasingly negative slope as speed increases, and decreasing with a rise in compression ratio PR.

55. (Currently Amended) The control method of claim 52, wherein a said maximum temperature (TXmaxTrise), as a function of the compression ratio PR which enables the maximum (TXmaxTrise) to be attained, is a set of curves, each curve associated with a specific value of speed PCNLP, each successive curve generally having an increasingly negative slope as speed increases, and decreasing with a rise in the compression ratio PR.

56. (Currently Amended) The control method of claim ~~48~~ 46, wherein the correction value DeltaTX_Hum depends on a specific humidity (SH) and is expressed as a function of a difference (DeltaSH), which difference (DeltaSH) is defined as a difference between a current specific humidity (SH_current) and a specific humidity (SH_60%RH) at a relative humidity RH of 60%

57. (Currently Amended) The control method of claim 56, wherein there is a linear correlation between the correction value DeltaTX_Hum and the difference (DeltaSH).

58. (Currently Amended) The control method of claim 57, further comprising the step of: determining the specific humidity (SH_60%RH) at a relative humidity of RH 60%

~~(SH_60%RH)~~ as a function of atmospheric temperature by interpolating the following values, where the temperature is expressed in degrees Rankine:

SH_60%RH	(T=419.67)	= 0.000070
SH_60%RH	(T=428.67)	= 0.000116
SH_60%RH	(T=437.67)	= 0.000188
SH_60%RH	(T=446.67)	= 0.000299
SH_60%RH	(T=455.67)	= 0.000464
SH_60%RH	(T=464.67)	= 0.000707
SH_60%RH	(T=473.67)	= 0.001059
SH_60%RH	(T=482.67)	= 0.001560
SH_60%RH	(T=491.67)	= 0.002263
SH_60%RH	(T=500.67)	= 0.003324
SH_60%RH	(T=509.67)	= 0.004657
SH_60%RH	(T=518.67)	= 0.006367
SH_60%RH	(T=527.67)	= 0.008670
SH_60%RH	(T=536.67)	= 0.011790
SH_60%RH	(T=545.67)	= 0.015966
SH_60%RH	(T=554.67)	= 0.021456
SH_60%RH	(T=563.67)	= 0.028552
SH_60%RH	(T=572.67)	= 0.037585
SH_60%RH	(T=581.67)	= 0.048949

59. (Currently Amended) The control method of claim ~~48~~ 46, wherein the correction value DeltaTX_Dpout is expressed directly as a function of a measured pressure drop (DPout).

60. (Previously Presented) The control method of claim 59, wherein there is a linear correlation between the correction value DeltaTX_Dpout and the measured pressure drop (Dpout).

61. (Currently Amended) A control method for a gas turbine comprising:

controlling opening of a vent valve to maintain a temperature rise (Trise) of gas in a combustion chamber of the gas turbine within predetermined limits using values of an exhaust temperature (TX) as a function of a compression ratio (PR), which values have been obtained for a plurality of operating conditions of the gas turbine; and

calculating the exhaust temperature (TX) as a linear approximation of a sum of a reference temperature (Txbase) plus correction values associated with an environmental or operating parameter.

wherein there are four of the correction values such that the exhaust temperature (TX) is expressed as:

$TX = TXbase + DeltaTX\_DPin + DeltaTX\_Dpout + DeltaTX\_Hum + DeltaTX\_PCNLP$

where:

$TXbase$ is determined as: $TXbase = TTX / ((518.67/TCD)^{x})$, where:

518.67 is a reference temperature;

TCD is an exhaust temperature of a compressor, expressed in a unit of measurement compatible with that of the reference temperature;

x is a nondimensional exponent calculated to minimize a mean quadratic deviation between values of TTX and the single control function; and

TTX is a transformed exhaust temperature.

DeltaTX_Dpin is a correction value for the exhaust temperature (TX) associated with a variation of pressure drops in intake pipes with respect to a nominal value of 0 mm H20;

DeltaTX_Dpout is a correction value for the exhaust temperature (TX) associated with a variation of pressure drops in exhaust pipes with respect to a nominal value of 0 mm H2O;

DeltaTX_Hum is a correction value for the exhaust temperature (TX) associated with a variation of relative humidity of air with respect to a nominal value of 60%;

and

DeltaTX_PCNLP is a correction value for the exhaust temperature (TX) due to a variation of a low pressure shaft speed with respect to a nominal value of 100%.

62. (Previously Presented) The control method of claim 61, wherein said values are associated with a control function that is defined for each of a plurality of values of atmospheric temperature.

63. (Currently Amended) The control method of claim 62, wherein said control functions represent a relationship between the exhaust temperature (TX) for partial loads at a

given speed of a low pressure shaft of the gas turbine and the compression ratio (PR), wherein each control function is associated with a value of atmospheric temperature, each control function generally having higher values as temperature rises and decreasing as the compression ratio (PR) decreases.

64. (Previously Presented) The control method of claim 61, wherein said values are associated with a single control function without a dependence on atmospheric temperature.

65. (canceled)

66. (Currently Amended) The control method of claim ~~65~~ 64, further comprising: determining a set point associated with said controlling step based on inverse of the transformation for a known compression ratio (PR).

67-68. (Cancelled)

69. (Currently Amended) The control method of claim ~~68~~ 61, wherein a set of functions, one for each value of speed (PCNLP), is expressed in terms of the maximum temperature (TX) as a function of the compression ratio (PR).

70. (Currently Amended) The control method of claim 69, further comprising:

evaluating ~~a~~ said ~~current~~ exhaust temperature (TX) by calculating:

TX = TXbase(PCNLP) + DeltaTX_DPin + DeltaTX_Dpout+DeltaTX_RH

where:

TXbase(PCNLP) is a reference temperature associated with a speed of the gas turbine; and

DeltaTX_RH is a change in exhaust temperature associated with relative humidity.

71. (Currently Amended) The control method of one of claims 66 ~~and~~ or 70, wherein the exponent X is a function of a speed of a low pressure wheel of the gas turbine.

72. (Previously Presented) The control method of claim 71, wherein the exponent X, for intermediate speeds (PCNLP), is calculated by interpolation of values of X which have been calculated at other speeds (PCNLP) as follows:

if PCNLP = 105%, X = 0.323;

if PCNLP = 100%, X = 0.33225;

if PCNLP = 90%, X = 0.34;

if PCNLP = 80%, X = 0.34425;

if PCNLP = 70%, X = 0.351;

if PCNLP = 60%, X = 0.348; or

if PCNLP = 50%, X = 0.3505.

73. (Previously Presented) The control method of claim 70, wherein the correction value DeltaTX_RH is calculated based on three ambient temperatures, three levels of relative humidity, and load characteristics according to a cubic law.

74. (Currently Amended) The control method of claim 73, wherein nine simulations are conducted, each associated with different fuel-air ratio F/A values, to determine a reference level, ~~the~~ current values of TX are then plotted as functions of PR, while a difference between the functions and base curves yields the correction value DeltaTX_RH, as expressed in the formula:

DeltaTX_RH = TX - TXbase.

75. (Previously Presented) The control method of claim 74, wherein said values of the correction value DeltaTX_RH are plotted as a function of a difference (DeltaSH) between a current value of specific humidity (SH_current) and a specific humidity at a relative humidity of 60% (SH_60%RH) such that:

DeltaSH = SH_current - SH_60%RH.

76. (Currently Amended) The control method of claim 75, wherein the function comprises two straight lines rising with an increase in the difference (DeltaSH), of which a first one of said straight lines is valid when DeltaSH is less than 0 and has a greater

slope than a second one of said straight lines which is valid when DeltaSH is greater than 0, the two straight lines passing through a point near an origin of the function's axes.

77. (Currently Amended) The control method of claim ~~68~~ 61, wherein the correction value DeltaTX_Dpin is a function of a measured pressure drop (DPin).

78. (Currently Amended) The control method of claim 77, further comprising the step of:

determining said correction value DeltaTX_Dpin taking into account three ambient temperatures, three pressure drops in ~~the~~ an intake and load characteristics according to a cubic law.

79. (Currently Amended) The control method of claim 78, wherein nine simulations are conducted, each associated with different fuel-air ratio F/A values, to reach a reference level, ~~the~~ current values of TX are then plotted as functions of PR, while a difference between the functions and base curves yields the correction value DeltaTX_Dpin, as expressed in the formula:

DeltaTX_Dpin = TX - TXbase.

80. (Currently Amended) The control method of claim 79, wherein said correction values (DeltaTX_Dpin) are linearly correlated with the measured pressure drop Dpin

such that the correction values of DeltaTX_Dpin increase with a rise in the measured pressure drop Dpin.

81. (Currently Amended) The control method of claim ~~68~~ 61, wherein the correction value {DeltaTX_Dpout} is a function of the measured pressure drop DPout.

82. (Previously Presented) The control method of claim 81, further comprising: determining said correction value DeltaTX_Dpout taking into account three ambient temperatures, three pressure drops in the exhaust and load characteristics according to a cubic law.

83. (Currently Amended) The control method of claim 82, wherein nine simulations are conducted, each associated with different fuel-air ratio F/A values, to reach a reference level, the current values of TX are then plotted as functions of PR, while a difference between the functions and base curves yields the correction value DeltaTX_Dpout, as expressed in the formula:

DeltaTX_Dpout = TX - TXbase.

84. (Previously Presented) The control method of claim 83, wherein the correction values DeltaTX_Dpout are linearly correlated with the exhaust pressure Dpout, such that the correction values DeltaTX_Dpout increase with a rise in the exhaust pressure Dpout.

85. (Currently Amended) The control method of claims 76, 80 ~~and~~ or 84, wherein a correlation for calculating the maximum exhaust temperature TX is:

$$TX = TTX(PCNLP, PR) / ((518.67/TCD)^{x(PCNLP)} + DeltaTX\_RH\ (DeltaSH) + DeltaTX\_Dpin\ (Dpin) + DeltaTX\_Dpout\ (Dpout).$$

86. (Previously Presented) The control method of claim 46 or 61, wherein said control method is used to control a two-shaft gas turbine and further comprising the step of: providing said two-shaft gas turbine with a dry nitrogen oxide (NOx) reduction system.

87. (Currently Amended) A control method for a gas turbine comprising:

controlling opening of at least one fuel valve to maintain a temperature (Tfire) of gas at an inlet of the gas turbine and a fuel-air ratio (F/A) within predetermined limits by: calculating a set point exhaust temperature (TX) as a sum of a reference temperature (TXbase) and a plurality of correction values each of which are associated with a different operating parameter;

wherein said plurality of correction values includes four corrections values and wherein said step of calculating further comprises calculating:

$$TX = TXbase + DeltaTX\_Dpin + DeltaTX\_Dpout + DeltaTX\_Hum + DeltaTX\_PCNLP$$

where:

TX is said set point exhaust temperature;

DeltaTX_Dpin is a correction value for the set point exhaust temperature (TX) associated with a variation of pressure drops in intake pipes with respect to a nominal value of 0 mmH2O,

DeltaTX_Dpout is a correction value for the set point exhaust temperature (TX) associated with a variation of pressure drops in exhaust pipes with respect to a nominal value of 0 mmH2O,

DeltaTX_Hum is a correction value for the set point exhaust temperature (TX) associated with a variation of a relative humidity of air with respect to a nominal value of 60%, and

DeltaTX_PCNLP is a correction value for the set point exhaust temperature (TX) associated with a variation of a speed of a low pressure shaft with respect to a nominal value of 100%; and

controlling opening of a vent valve to maintain a temperature rise (Trise) of gas in a combustion chamber of the gas turbine within predetermined limits using values of an exhaust temperature (TX) as a function of a compression ratio (PR), which values have been obtained for a plurality of operating conditions of the gas turbine. - -

Allowable Subject Matter

4. Claims 46, 49-64, 66 and 69-87 are allowed.

5. The following is an examiner's statement of reasons for allowance:

Note that a table of the interpolating values for determining the specific humidity that incorporated into claim 58 is according to MPEP [2173.05, Reference to Figures or Tables].

The prior art fails to disclose or render obvious of:

In claims 46 and 87, a plurality of correction values each of which are associated with a different operating parameter; wherein corrections values are calculated by computer simulations of the gas turbine, the simulations being conducted by specifying attainment of one of: a maximum of the set point exhaust temperature (TXmaxTfire) and a maximum of the fuel-air ratio (F/A), for each condition differing from a reference condition; further wherein said plurality of correction values includes four corrections values and wherein said step of calculating further comprises calculating:

TX = TXbase + DeltaTX_Dpin + DeltaTX_Dpout + DeltaTX_Hum + DeltaTX_PCNLP

where: TX is said set point exhaust temperature; DeltaTX_Dpin is a correction value for the set point exhaust temperature (TX) associated with a variation of pressure drops in intake pipes with respect to a nominal value of 0 mmH2O, DeltaTX_Dpout is a correction value for the set point exhaust temperature (TX) associated with a variation of pressure drops in exhaust pipes with respect to a nominal value of 0 mmH2O, DeltaTX_Hum is a correction value for the set point exhaust temperature (TX) associated with a variation of a relative humidity of air with respect to a nominal value of 60%, and DeltaTX_PCNLP is a correction value for the set point exhaust temperature (TX) associated with a variation of a speed of a low pressure shaft with respect to a

nominal value of 100%.

In claim 61, calculating the exhaust temperature (TX) as a linear approximation of a sum of a reference temperature (Txbase) plus correction values associated with an environmental or operating parameter. wherein there are four of the correction values such that the exhaust temperature (TX) is expressed as:

TX = TXbase + DeltaTX_DPin + DeltaTX_Dpout + DeltaTX_Hum + DeltaTX_PCNLP

where: TXbase is determined as: TXbase = TTX/ $((518.67/TCD)^x)$, where: 518.67 is a reference temperature; TCD is an exhaust temperature of a compressor, expressed in a unit of measurement compatible with that of the reference temperature; x is a nondimensional exponent calculated to minimize a mean quadratic deviation between values of TTX and the single control function; and TTX is a transformed exhaust temperature. DeltaTX_Dpin is a correction value for the exhaust temperature (TX) associated with a variation of pressure drops in intake pipes with respect to a nominal value of 0 mm H20; DeltaTX_Dpout is a correction value for the exhaust temperature (TX) associated with a variation of pressure drops in exhaust pipes with respect to a nominal value of 0 mm H2O; DeltaTX_Hum is a correction value for the exhaust temperature (TX) associated with a variation of relative humidity of air with respect to a nominal value of 60%; and DeltaTX_PCNLP is a correction value for the exhaust temperature (TX) due to a variation of a low pressure shaft speed with respect to a nominal value of 100%.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUTTHIWAT WONGWIAN whose telephone number is 571-270-5426. The examiner can normally be reached on Monday - Thursday, 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MICHAEL A. CUFF can be reached on 571-272-6778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. W./
Examiner, Art Unit 3741

/Michael Cuff/

Supervisory Patent Examiner, Art Unit 3741